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PATENT SPECIFICATION



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PROVISIONAL SPECIFICATION.

Improvements in or relating to Compression Pumps.

We, LEWIS CHEW and WILLIAM FREDERICK JENNINGS, both of 72/74, Gray's Inn Road, W.C. 1, British subjects, do hereby declare the nature of 5 this invention to be as follows:—

This invention relates to improvements in that class of compression pumps described in our Patent Specification No. 137,225 dated 21st May 1919 and has 10 reference to the particular construction of the false or yielding cylinder head which carries the delivery valves.

The improvements hereinafter more fully described refer likewise to that 15 type of compression pump described in the Complete Specification accompanying our Application No. 8133, dated 18th March 1920, wherein what are known as the ring type of valve is employed in 20 the place of the mushroom type described in the aforesaid Patent Specification No. 137,225.

In the aforesaid Specification No. 8133 of 1920 the delivery valve which is 25 of the ring type is mounted within a composite head that is retained on a seating provided at the top of the cylinder by a compressed spring housed within the cylinder cover and is composed essentially of three distinct parts 30 or machined discs which form together the housing for the ring valve.

The subject matter of the present invention consists in a modification of 35 the structure of this false head, which modification is very desirable in the manufacture of the larger size machines, besides as will be hereinafter explained the details of the construction tend to 40 simplicity of manufacture and incidentally provide an uninterrupted course for the compressed gases to travel in

their exit to the discharge conduit.

According to the present invention the false head comprises two parts or discs 45 that are retained together by a central stud fixed to the lowermost disc that contacts with the seating provided at the top of the cylinder and is retained in this position by the effect of several 50 helical springs that are more or less housed in cavities provided therefor in the upper disc within the cylinder cover. The lower disc which is preferably of 55 mild steel is provided with a series of holes preferably of an inclined character that communicate with annular slots at the top side of the said disc which is provided with the usual seatings for inner and outer ring valves. The upper 60 disc which as before explained is secured to the lower disc is provided with an annular groove cast or otherwise provided therein which forms a common gas collecting channel that encloses said ring 65 valves and is in communication with the discharge conduit. Within this conduit and in the body of the upper disc are provided three or more holes to accommodate spring urged plungers or 70 steady pins which depend from the said disc to within the aforesaid annular conduit and rest on the lower disc so as to form guides to maintain the concentricity of the inner and outer ring valves. 75 These steady pins are provided with shoulders to limit the lift of the valves and at the same time provide a convenient means for supporting light helical springs to maintain the ring 80 valves on their respective seatings. On the top side of the upper disc are provided three or more shallow cavities wherein are housed the helical springs

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which press the yielding head on to the seating provided therefor at the top of the cylinder.

The top disc is preferably provided with a handle so that it can be screwed on to the lower disc whereby the complete head and housing for the ring valves is formed of two plates or discs instead of three as particularly described

in the Specification of our Application 10 No. 8133/20.

Dated this 1st day of April, 1920.

L. CHEW,
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COMPLETE SPECIFICATION.

Improvements in or relating to Compression Pumps.

We, LEUIK CHEW and WILLIAM FREDERICK JENNINGS, both of 72/74, 20 Gray's Inn Road, London, W.C. 1, Engineers, British subjects, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and 25 ascertained in and by the following statement:—

This invention relates to improvements in that class of compression pumps described in our Patent Specification 30 No. 137,225 dated 21st May 1919 and has reference to the particular construction of the false or yielding cylinder head which carries the delivery valves.

The improvements hereinafter more 35 fully described refer likewise to that type of compression pump described in the Complete Specification accompanying our Patent No. 151,902 dated 18th March 1920, wherein what are known as 40 the ring type of valve is employed in place of the mushroom type described in the aforesaid Patent Specification No. 137,225.

In the aforesaid Specification No. 45 151,902 of 1920 the delivery valve which is of the ring type is mounted within a composite head that is retained on a seating provided at the top of the cylinder by a compressed spring housed 50 within the cylinder cover and is composed essentially of three distinct parts or machined discs which form together the housing for the ring valve.

The subject matter of the present 55 invention consists in a modification of the structure of this false head, which is made up of two concentric discs wherein are housed ring valves that are retained in their respective positions by 60 spring urged plungers carrying steady pins that maintain their concentricity and afford a limited movement thereof; the said discs being retained upon the

seating at the top of the cylinder by helical springs within the cover. This modification is very desirable in the manufacture of the larger size machines besides as will be hereinafter explained the details of the construction tend to simplicity of manufacture and incidentally provide an uninterrupted course for the compressed gases to travel in their exit to the discharge conduit, and in order that the improvements may be clearly understood reference may be had to the accompanying drawing in which Figure 1 is a vertical section of the upper part of a compression cylinder with a yielding head constructed in accordance with our invention and Figure 2 is a plan of Figure 1 with the cylinder cover removed similar letters of reference relating to like parts in both the figures. According to the present invention the false head comprises two parts or discs 20 and 22 that are retained together by a central stud 21 fixed to the lowermost disc 20 which contacts with the seating *r* provided at the top of the cylinder *a* and is retained in this position by the effect of several helical springs *q* that are more or less housed in cavities 2, 3 and 4 provided therefor in the upper disc 22 within the cylinder cover *p*. The lower disc 20 which is preferably of mild steel is provided with a series of holes 27 preferably of an inclined character that communicate with annular slots 28 at the top side of the disc 20 which is provided with the usual seatings 29 for inner and outer ring valves 30 and 31 respectively. The upper disc 22 which as before explained is secured to the lower disc 20 by the central stud 21 is provided with an annular groove 37 cast 100 or otherwise provided therein which forms a common gas collecting channel that encloses the ring valves 30 and 31 and is in communication with the dis-

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charge conduit attached to the annular chamber or belt *s* by means of the passages 38.

Within this channel 37 and in the body of the upper disc 22 are provided three or more holes *h* to accommodate spring urged plungers *i* carrying steady pins *j* which depend from the disc 22 and rest on the lower disc 20 so as to form guides to maintain the concentricity of the inner and outer ring valves 30 and 31. These steady pins *j* are provided with shoulders *k* to limit the lift of the valves 30 and 31 and at the same time provide a convenient means for supporting light helical springs *m* that maintain the ring valves on their respective seatings 29.

The upper disc 22 is secured to the lower disc 20 by the nut *n* the central stud protruding therefrom as shown for the reception of a suitable handle, whereby the complete head and housing for the ring valves which is formed of two plates or discs can be readily withdrawn on the removal of the cylinder cover *u*.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. In a compression pump of the kind referred to constructing the false or yielding cylinder head of two concentric discs wherein are housed ring valves that are retained in their respective positions by spring urged plungers carrying steady pins that maintain their concentricity and afford a limited movement thereof substantially as described.

2. A false or yielding cylinder head for a compression pump in accordance with the preceding claiming clause hereof comprising the discs 20 and 22 45 secured together by the central stud 21 the disc 22 being provided with the annular channel 37 for enclosing the ring valves 30 and 31 that are maintained upon their respective seats 29 by the 50 steady pins *j* depending from the spring urged plungers *i* housed in the upper disc 22 the whole being retained upon the seating *r* at the top of the cylinder *a* by the helical springs *g* within the cover 55 *p* substantially as described and illustrated in the drawing hereto annexed.

3. In a false or yielding head for a compression pump constructed in accordance with the preceding claiming clause hereof the employment of the light helical springs *m* in combination with the spring urged plungers *i* for the purpose of maintaining both the ring valves 30 and 31 upon their respective seatings 65 substantially as described and illustrated in the drawing.

4. The improved false or yielding head for a compression pump in which is contained one or more ring delivery 70 valves having its several parts constructed arranged and operating substantially as described and illustrated in the drawing hereto annexed.

Dated this 24th day of December, 1920. 75

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[This Drawing is a reproduction of the Original on a reduced scale.]

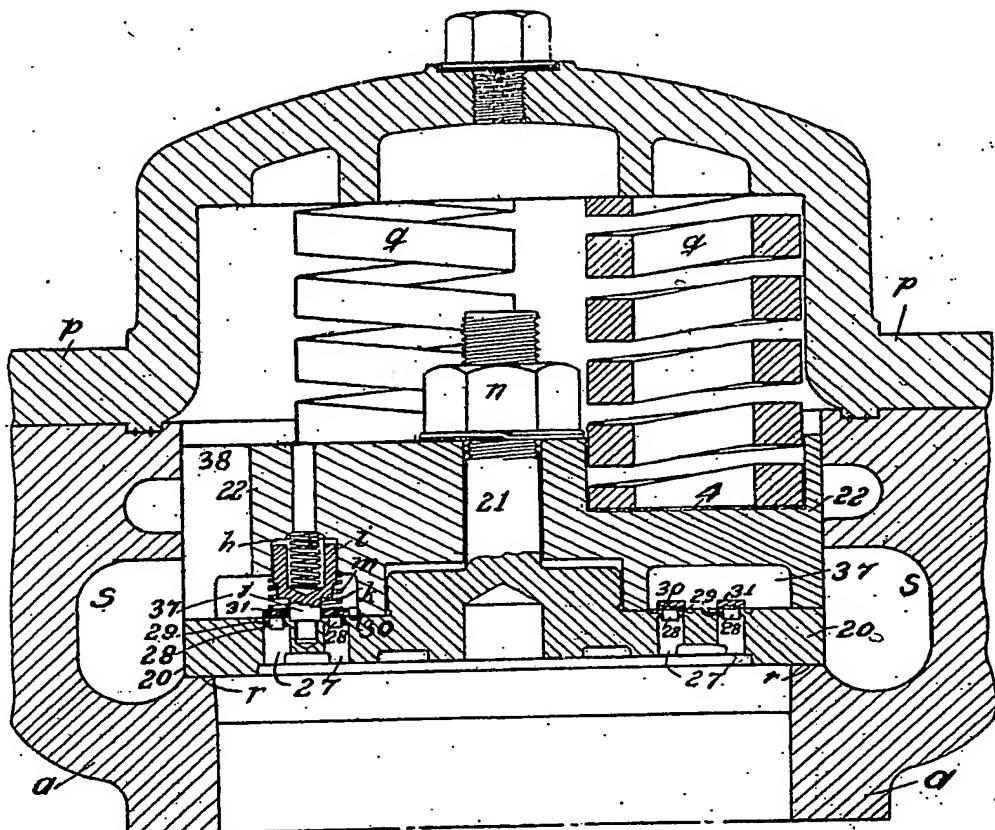


Fig. 1.

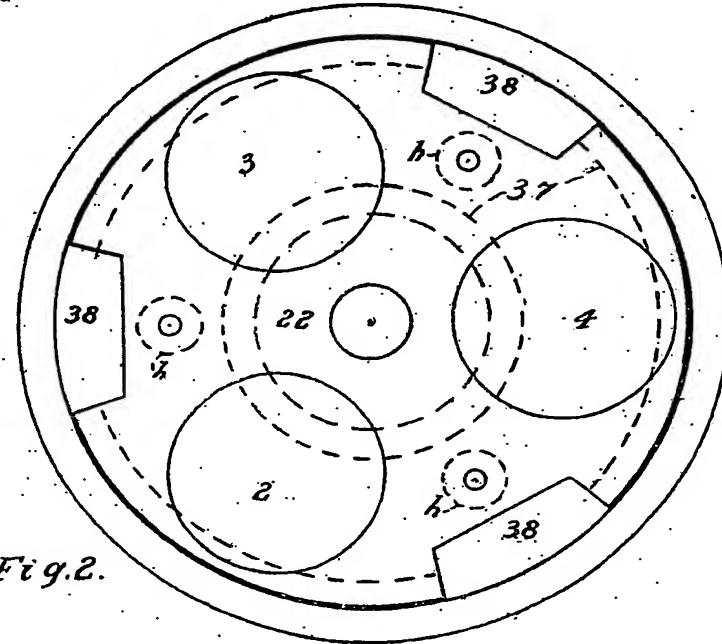


Fig. 2.